

IN THE CLAIMS

Claims 1, 20, and 40 are amended herein. New claims 41-44 are added. All pending claims are reproduced below.

1 1. (Currently Amended) A method implemented by a data processing system for
2 classifying a plurality of received images, comprising:
3 extracting features from a training set that is a user-chosen subset of the
4 plurality of images, each image in the training set having an associated class;
5 classifying, by the data processing system, at least one of the plurality of
6 images in accordance with the extracted features and classes of the training set, the
7 classifier grouping the plurality of images before receiving feedback from a human
8 being;
9 allowing a user to classify ones of the plurality of images; and
10 displaying the results of a comparison between the classification by the
11 data processing system and the classification by the user.
12

1 2. (original) The method of claim 1, wherein the features of the training set
2 include size.

1 3. (original) The method of claim 1, wherein the features of the training set
2 include brightness.

1 4. (original) The method of claim 1, wherein the features of the training set
2 include color.

1 5. (original) The method of claim 1, wherein the features of the training set
2 include shape.

1 6. (original) The method of claim 1, wherein the features of the training set
2 consist at least one of: texture, moment of inertia, context, proximity to wafer features,

3 proximity to other defects, connectivity to adjacent features, connectivity to other
4 defects, and yield relevant properties derived from the image.

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1 7. (original) The method of claim 1, wherein the features of the training set
2 include defect coordinates in wafers.

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1 8. (original) The method of claim 1, wherein the features of the training set
2 include defect coordinates when spatial cluster analysis is used.

3
1 9. (original) The method of claim 1, wherein the features of the training set
2 include information derived from one of the processing history, yield, relevance, and
3 origins of defects.

4
1 10. (original) The method of claim 1, where classifying, by the data processing
2 system, at least one of the plurality of images in accordance with the extracted features
3 and classes of the training set includes classifying the plurality of images using a
4 Kohonen map technique.

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1 11. (original) The method of claim 10, wherein the Kohonen map is seeded with
2 non-random numbers.

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1 12. (original) The method of claim 1, where classifying, by the data processing
2 system, at least one of the plurality of images in accordance with the extracted features
3 and classes of the training set includes classifying the plurality of images using a spatial
4 signature analysis technique.

1 13. (original) The method of claim 1, where classifying, by the data processing
2 system, at least one of the plurality of images further includes classifying in accordance
3 with cluster-based features instead of images.
4

1 14. (original) The method of claim 1, wherein allowing a user to classify ones of
2 the plurality of images includes displaying the images to the user in classification groups
3 determined by the classifying step.
4

1 15. (original) The method of claim 1, further comprising sending feedback to an
2 inspection system to fine-tune the inspection system in accordance with the user's
3 classification.
4

1 16. (original) The method of claim 1, further comprising: inspecting an
2 inspection object in real-time and sending the results of the inspection set to a classifier
3 trained in accordance with the plurality of images classified by the user.
4

1 17. (original) The method of claim 1, wherein the features include tool history
2 information relating to an inspection system.
3

1 18. (original) The method of claim 1, wherein the features include tool history
2 information relating to the past success rate of the classification step.
3

1 19. (original) The method of claim 1, wherein only some of the plurality of
2 images relate to an semiconductor etch process.
3

1 20. (Currently Amended) A method implemented by a data processing system
2 for classifying a plurality of received images, comprising:

3 extracting features from a training set that is a user-chosen subset of the
4 plurality of images, each image in the training set having an associated class;

5 classifying, by the data processing system, at least one of the plurality of
6 images in accordance with the extracted features and classes of the training set, the
7 classifying including grouping the plurality of images before receiving feedback from a
8 human being; and

9 displaying the results of a comparison between the classification by the
10 data processing system and [[the]] a classification by the user.
11

1 21. (Original) A system that classifies a plurality of received images,
2 comprising:

3 a software portion configured to extract features from a training set that is
4 a user-chosen subset of the plurality of images, each image in the training set having an
5 associated class;

6 a software portion configured to classify, by the system, at least one of
7 the plurality of images in accordance with the extracted features and classes of the
8 training set;

9 a software portion configured to allow a user to classify ones of the
10 plurality of images; and

11 a software portion configured to send feedback to an inspection system
12 to fine-tune the inspection system in accordance with the user's classification.
13

1 22. (original) The system of claim 21, wherein the features of the training set
2 include size(original).
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1 23. (original) The system of claim 21, wherein the features of the training set
2 include brightness.

3

1 24. (original) The system of claim 21, wherein the features of the training set
2 include color.

3

1 25. (original) The system of claim 21, wherein the features of the training set
2 include shape.

3

1 26. (original) The system of claim 21, wherein the features of the training set
2 consist at least one of: texture, moment of inertia, context, proximity to wafer features,
3 proximity to other defects, connectivity to adjacent features, connectivity to other
4 defects, and yield relevant properties derived from the image.

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1 27. (original) The system of claim 21, wherein the features of the training set
2 include defect coordinates in wafers.

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1 28. (original) The system of claim 21, wherein the features of the training set
2 include defect coordinates when spatial cluster analysis is used.

3

1 29. (original) The system of claim 21, wherein the features of the training set
2 include information derived from one of the processing history, yield, relevance, and
3 origins of defects.

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1 30. (original) The system of claim 21, where the portion configured to classify at
2 least one of the plurality of images in accordance with the extracted features and classes
3 of the training set includes a portion configured to classify the plurality of images using
4 a Kohonen map technique.

1 31. (original) The system of claim 30, wherein the Kohonen map is seeded with
2 non-random numbers.
3

1 32. (original) The system of claim 21, where the portion configured to classify at
2 least one of the plurality of images in accordance with the extracted features and classes
3 of the training set includes a portion configured to classify the plurality of images using
4 a spatial signature analysis technique.
5

1 33. (original) The system of claim 21, where the portion configured to classify at
2 least one of the plurality of images further includes a portion configured to classify in
3 accordance with cluster based features instead of images.
4

1 34. (original) The system of claim 21, wherein the portion configured to allow a
2 user to classify ones of the plurality of images includes a portion configured to display
3 the images to the user in classification groups determined by the classifying step.
4

1 35. (original) The system of claim 21, further comprising a portion configured to
2 send feedback to an inspection system to fine tune the inspection system in accordance
3 with the user's classification.
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1 36. (original) The system of claim 21, further comprising: a portion configured
2 to inspect an inspection object in real-time and to send the results of the inspection set to
3 a classifier trained in accordance with the plurality of images classified by the user.

1 37. (original) The system of claim 21, wherein the features include tool history
2 information relating to an inspection system.

1 38. (original) The system of claim 21, wherein the features include tool history
2 information relating to the past success rate of the classification step.

1 39. (original) The system of claim 21, wherein only some of the plurality of
2 images relate to a semiconductor etch process.

1 40. (Currently Amended) A system that classifies a plurality of received images,
2 comprising:

3 a portion configured to extract features from a training set that is a user-
4 chosen subset of the plurality of images, each image in the training set having an
5 associated class;

6 a portion configured to classify, by the system, at least one of the
7 plurality of images in accordance with the extracted features and classes of the training
8 set, the classifier grouping the plurality of images before receiving feedback from a
9 human being;

10 a portion configured to send feedback to an inspection system to fine
11 tune the inspection system in accordance with the classification performed by the data
12 processing system.

1 41. (New) The method of claim 1, wherein the plurality of images are images
2 captured during a semiconductor manufacturing process.

1 42. (New) The method of claim 20, wherein the plurality of images are images
2 captured during a semiconductor manufacturing process.

1 43. (New) The system of claim 21, wherein the plurality of images are images
2 captured during a semiconductor manufacturing process.

1 44. (New) The system of claim 40, wherein the plurality of images are images
2 captured during a semiconductor manufacturing process.